

It is important to know with certainty the efficiency of electric power production in the United States from fossil fuels.

In the report, <http://www.eia.doe.gov/cneaf/electricity/epa/epa.pdf> Table 1.1, page 16, the amount of electricity generated by type of producer is reported for each year from 1999-2006. A report from the EPA, <http://www.epa.gov/climatechange/emissions/downloads06/07CR.pdf>, Table 3-3, page 3-4, gives the amount of carbon dioxide from electricity production for each year from 1995-2006. From last cited reference, Table A3, p86 gives a conversion factor for each fuel type, as the amount of amount of carbon dioxide emitted per million BTU of heat developed. This seems to be solid data, applicable to the whole United States for each whole year. So, we know how much carbon dioxide came from the power plants, and we can convert this to the corresponding amount of heat. And we know the amount of electricity produced. Efficiency is the amount of electricity coming out of power plant heat engines divided by the amount of heat that went into these heat engines.

Based on the above data and the analysis process described, it is definite that in 2005 in the United States:

- (1) Average efficiency of power production from fossil fuels was 34.4%
- (2) Average efficiency of power production from coal was 32.5% (32.5% in 1999)
- (3) Average efficiency of power production from natural gas was 42.1% (29.8% in 1999)
- (4) Average efficiency of power production from petroleum was 29.6% (27.1% in 1999)

Care should be taken in extrapolating natural gas efficiency improvements in the future since gains from improved equipment may not continue as rapidly as this suggests, due to the losses experienced by companies that invested in such equipment starting around 1999.